

I claim:

1. A mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis with a swingarm member rotatably mounted to a frame, the mechanism including;

(a) a swingarm pivot axle rotatably securing the swingarm member to the frame;

5 (b) a pair of flexure members, each flexure member secured to the frame by a plurality of flexure member mounts, each flexure member including an aperture accepting the swingarm pivot axle; and

(c) means for adjustably controlling the degree of lateral axial deflection of the swingarm pivot axle and associated swingarm member relative to the frame and attached flexure members during
10 operation of the motorcycle.

2. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 1 wherein, the adjustably controlling means includes a swingarm locking nut member secured to a threaded end of the swingarm pivot axle and securing the swingarm member to the frame, the nut member adjustable to provide a single, selected degree of lateral, axial deflection of the swingarm pivot axle relative to the frame, and each flexure member positioned to control lateral, axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

3. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 2 wherein, the flex characteristics of the pair of flexure members determines the degree of lateral, axial deflection of the swingarm member relative to the frame.

4. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 1 wherein, each flexure member is mounted to an outboard frame portion to accept the swingarm pivot axle.

5. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 1 wherein, each flexure member is mounted to a central frame portion to accept the swingarm pivot axle.

6. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 1 wherein, the adjustably controlling means includes a cam assembly encircling the swingarm pivot axle, the cam assembly comprising a cam stationary member rigidly secured to the frame and a cam rotating member rotatable by an actuator, the cam members including at least one ramped contact surface there between, the actuator rotating the cam rotating member to provide a variable degree of lateral, axial deflection of the swingarm pivot axle relative to the frame, and each flexure member positioned to control axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

7. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 6 wherein, the flex characteristics of the pair of flexure members determines the degree of lateral, axial deflection of the swingarm member relative to the frame.

8. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 6 wherein, the actuator is a hydraulic cylinder device.

9. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 6 wherein, the actuator is an electric screw device.

10. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 6, further including an actuator control system providing control of the rotation of the cam rotating member by the actuator, the actuator control system including a logic unit receiving input from at least one sensor member, the at least one sensor member input, via the logic unit, producing an actuator control signal causing the actuator to varying the degree of lateral axial deflection of the swingarm pivot axle relative to the frame, and each flexure member positioned to control axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

11. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 10 wherein, the at least one sensor member is selected from the group, a mechanism cam angle sensor, a lean angle sensor, a vehicle speed sensor, a transmission gear position sensor, an engine speed sensor, a throttle position sensor, a brake actuation sensor, a suspension position sensor, and a rider override switch.

12. A mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis with a swingarm member rotatably mounted to a frame, the mechanism including;

(a) a swingarm pivot axle rotatably securing the swingarm member to the frame;

(b) a pair of flexure members, each flexure member secured to the frame by a plurality of flexure member mounts, each flexure member including an aperture accepting the swingarm pivot axle; and

(c) a swingarm locking nut member secured to a threaded end of the swingarm pivot axle and securing the swingarm member to the frame, the nut member adjustable to provide a single, selected degree of lateral, axial deflection of the swingarm pivot axle relative to the frame, each flexure member positioned to control lateral, axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

13. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 12 wherein, the flex characteristics of the pair of flexure members determines the degree of lateral, axial deflection of the swingarm member relative to the frame.

14. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 12 wherein, each flexure member is mounted to an outboard frame portion to accept the swingarm pivot axle.

15. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 12 wherein, each flexure member is mounted to a central frame portion to accept the swingarm pivot axle.

16. A mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis with a swingarm member rotatably mounted to a frame, the mechanism including;

(a) a swingarm pivot axle rotatably securing the swingarm member to the frame;

(b) a pair of flexure members, each flexure member secured to the frame by a plurality of flexure member mounts, each flexure member including an aperture accepting the swingarm pivot axle; and

(c) a cam assembly encircling the swingarm pivot axle, the cam assembly comprising a cam stationary member rigidly secured to the frame and a cam rotating member rotatable by an actuator, the cam members including at least one ramped contact surface there between, the actuator rotating the cam rotating member to provide a variable degree of lateral, axial deflection of the swingarm pivot axle relative to the frame, and each flexure member positioned to control axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

17. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 16 wherein, the flex characteristics of the pair of flexure members determines the degree of lateral, axial deflection of the swingarm member relative to the frame.

18. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 16 wherein, the actuator is a hydraulic cylinder device.

19. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 16 wherein, the actuator is an electric screw device.

20. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 16, further including an actuator control system providing control of the rotation of the cam rotating member by the actuator, the actuator control system including a logic unit receiving input from at least one sensor member, the at least one sensor member input, via the logic unit, producing an actuator control signal causing the actuator to varying the degree of lateral axial deflection of the swingarm pivot axle relative to the frame, and each flexure member positioned to control axial deflection of the swingarm member in one of two opposed directions relative to the frame and attached flexure members during operation of the motorcycle.

21. The mechanism for providing adjustable, controlled flex and lateral suspension movement to a motorcycle chassis of claim 20 wherein, the at least one sensor member is selected from the group, a mechanism cam angle sensor, a lean angle sensor, a vehicle speed sensor, a transmission gear position sensor, an engine speed sensor, a throttle position sensor, a brake actuation sensor, a suspension position sensor, and a rider override switch.